and AIRCRAFT ENGINEER

ArrowAntilCBM.jpg

No 2560 Vol 73 FRIDAY 14 FEBRUARY 1958

Lilitor-in Chief
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Tilitor
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Hiffe and Sons Ltd.

Dorset House Stamford Street Landon, S.F.1 Lelephone - Waterloo 3333 Felegrams - Flightpres Sedist London

BRANCH OPFICES
Covenity
8-10 Corporation Street
Lelephone · Covenity 5210

Birmingham King Edward House, New Street, 2 Telephone - Midland 7191 (7 lines)

Manchester 260 Deansgate, 2 Telephone - Blackfriars 4412 (3 lines) Deansgate 3595 (2 lines)

Ginsgow 26n Renfield Street, C.2 Telephone - Central 1265 (2 lines)

New York, N.Y. Thomas Skinner and Co. (Publishers). Ltd. III Broadway, 6 Telephone • Digby 9-1197

ANNUAL SUBSCRIPTION
Home E4-15s Od, overseas E5-0s Od.
Canada and U.S.A. \$15,00.

Second Class Mail privileges authortical at New York, N.Y.

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Ironclads and Arrows . . .

OLLOWING publication of J. M. Bruce's book British Aeroplanes 1914-18, the naval amateurs have been similarly rewarded with the issue, by Seeley Service, of Dr. Oscar Parkes' British Battleships. Therein the ironclads, monitors, turret-ships and Dreadnoughts pass in majestic review; and we ourselves are especially interested to note the tenacity of sail (and, for that matter, the ram also) even after the seal of Admiralty had been set on the steam engine. From the 1840s on into the 1890s both canvas and screw were being applied in combination to enhance the seagoing and warlike qualities of the old "battlewaggons"—in picturesque, if bardly shipshape, forms.

There was no weapon-system concept in the development of these vessels; no insistence on steam for steam's sake. Merely a gradual process of integration and of evolution. And we are wondering if some similar process could not yet emerge

in the development of military aircraft and missiles.

It might be supposed, for example, that in every aspect of employment the antimissile missile would prove to be very far removed from the manned fighting aeroplane. Yet the possibility is already seen that, in order to achieve its maximum kill potential, the "anti" missile may actually form an alliance with the

manned fighter.

The feasibility of this rather bewildering departure has been expounded by Jim Floyd, Avro Aircraft's vice-president engineering, in an address designed to reassure his colleagues that "whereas the launching of the Russian sputnik satellites was a very significant event in the annals of aviation, its effect on the Arrow programme should be singularly positive." Mr. Floyd considers that even when the ICBM comes along the Arrow intercepter will be one of the most potent weapons in combating it. "If you think about it for a minute," he says, "the normal launching platforms for anti-missile missiles are stationary. The Russian can find out where they are and destroy them. On the other hand, an airborne missile mothership (which could be the Arrow) can be rapidly moved from one place to another carrying an anti-ICBM missile . . ."

It might be imagined that a missile suitable for carrying an anti-missile warhead would prove a formidable load even for the mighty Arrow; but Mr. Floyd had looked into the matter with a "quick specific calculation" on an ICBM approaching at Mach 10 at 200 miles above the earth. He finds that if an "anti" is launched from an aircraft flying at Mach 1.5 at 60,0000ft, its thrust need be only about one-third of that required for a ground-launched weapon carrying the same size of warhead to a given point in approximately the same time. And dividends

would accrue in range and accuracy.

. . . Missiles and Axes

If the manned fighter might yet be applied as an aid to the defensive missile, so might its classic powerplant, the turbojet, find a niche of its own in the missile edifice. We have remarked that the anti-missile might be expected to depart in all respects from the traditional formula of the manned fighting aeroplane; and equally it has hitherto been thought that the air-breathing turbojet would find its ultimate application in manned aircraft, or in "cruise" missiles of elementary form. But here again we are presented—by Charles G. Dibble of General Electric's Flight Propulsion Laboratory—with a new and significant possibility; namely, the application of specially developed turbojets for the initial boosting of advanced missiles. Other important missile applications are in prospect.

There are people who will not be slow to remark that both Mr. Floyd and Mr. Dibble have pretty expensive battleaxes to grind preparatory to getting them accepted into the armoury of the future. And indeed they have. But the most rabid concept-planner could hardly deny that their proposals might well affect the evolution of weapons to come—and that the grinding of the axe might defer

for many a year the axing of the aeroplane and turbojet.